PATENT COOPERATION TREATY IPER -> D 8

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

LIND, Robert
MARKS & CLERK
4220 Nash Court
Oxford Business Park South
Oxford OX4 2RU
GRANDE BRETAGNE

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing *(day/month/year)*	18.06.2004
Applicant's or agent's file reference	**IMPORTANT NOTIFICATION**
SS.P52004WO	

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/GB 03/00802	25.02.2003	01.03.2002

Applicant
SPICE APPLICATION SYSTEMS LTD et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the International preliminary examining authority:	Authorized Officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Thumser, A Tel. +49 89 2399-7991

Form PCT/IPEA/416 (January 2004)

Not entered

10/505161

PATENT COOPERATION TREATY

Rec'd PCT/PTO 30 AUG 2004

REC'D 22 JUN 2004

WIPO PCT

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference SS.P52004WO	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/GB 03/00802	International filing date *(day/month/year)* 25.02.2003	Priority date *(day/month/year)* 01.03.2002
International Patent Classification (IPC) or both national classification and IPC A23P1/08		
Applicant SPICE APPLICATION SYSTEMS LTD et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 5 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the opinion
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
25.09.2003	18.06.2004
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Gaiser, M Telephone No. +49 89 2399-2383

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB 03/00802

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1, 5-8	as originally filed
2-4	received on 31.12.2003 with letter of 23.12.2003

Claims, Numbers

1-9	received on 31.12.2003 with letter of 23.12.2003

Drawings, Sheets

1/4-4/4	as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐ contained in the international application in written form.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority in written form.

   ☐ furnished subsequently to this Authority in computer readable form.

   ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐ the description, pages:

   ☒ the claims, Nos.: 10-12

   ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-9
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-8
	No:	Claims	9
Industrial applicability (IA)	Yes:	Claims	1-9
	No:	Claims	

2. Citations and explanations

   see separate sheet

Re Item I
Basis of the report

The amended set of claims is based on the claims as originally filed. The technical features added to claim 1 are derivable from original claims 2 and 4.
The description has been adapted accordingly.

Re Item V
Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. The method defined in claim 1 differs from the one known from D2=GB-A-2 286 515 in that, according to claim 1, the flavouring substance is provided by sliding down an inclined chute, driven by gravity, while D2 discloses nozzles for applying the flavouring substance.
   Due to the larger cross section of an inclined chute, in comparison to a nozzle, the tendency to blocking is reduced by the utilisation of the chute. This, however, requires the installation of a nozzle for pressurised gas. Since none of said elements is disclosed or hinted at in the available prior art, the method according to claim 1, and its dependent claims 2-4, is regarded as involving an inventive step.

2. The apparatus defined in claim 5 provides the inventive features used in the method of claim 1, i.e. an inclined chute, that allows dosing of the flavouring substance by gravity. Therefore, the apparatus of claim 5, and claims 6-8, which depend on claim 5, is regarded as being new (Article 33(2) PCT) and inventive (Article 33(3) PCT), too.

3. While claims 1-8 appear to be in agreement with respect to the provisions of Article 33 PCT, claim 9 of the present application does not fulfil the requirements of Article 33(3) PCT for presence of an inventive step.

   From D1=US6312740 an apparatus for use in coating products with a coating substance is known, which apparatus comprises a gas jet nozzle having means for being coupled to a supply of pressurised air, a nozzle holder and a needle electrode attached to said nozzle holder being coupled to a high voltage charging means. The nozzle is located such that gas ejected from the nozzle passes through an electric corona field created by the electrode (see col. 1, l. 60 - col. 2, l.

14 and Figs. 1,3).
While D1 does not disclose the jet nozzle being removably attached to the nozzle holder, this would be a design feature obvious to the man skilled in the art, in order to provide the coating apparatus with improved cleanability, or in order to allow the nozzle jet to be replaced when damaged by e.g. abrasive forces.

are formed in the base of the delivery chamber so that the delivered substance drops through the slots and falls onto a product delivery conveyor. An electrostatic charging head is located between the delivery chamber and the product delivery conveyor, so that the coating substance falls through an electric field formed by the charging head, acquiring a charge as it does so.

A problem with apparatus of the type described in US5,287,801 is that the slots in the delivery chamber can become blocked, particularly where the surrounding environment is hot and possibly humid (this is often the case in a food production facility). A further potential problem is that the coating substance is not broken down into sufficiently small grains by the delivery system. Again, this problem may be exacerbated by a warm and humid atmosphere.

An alternative electrostatic coating apparatus comprises a venturi tube through which the coating substance is forced by a pressurised gas. Upon emerging from an exit nozzle, the substance passes over a charging electrode. Again, a blockage problem can arise as the coating substance building up within the venturi tube. Such blockage results in production downtime, increasing operating costs and decreasing productivity.

According to a first aspect of the present invention there is provided a method of coating a product, carried on a surface of a delivery mechanism, with a coating substance, the method comprising:

delivering the coating substance to a location above said surface carrying said product via an inclined chute down which the coating substance falls under gravity;

allowing the coating substance to fall under gravity in the direction of said surface from the end of the inclined chute;

during its fall under gravity, and substantially immediately beneath the exit end of said inclined chute, subjecting the coating substance to at least one pressurised gas stream, whereby the falling coating substance is dispersed, and to an electric field, whereby the coating substance is charged.

In accordance with a further aspect of the present invention, there is provided an apparatus for coating a product, carried on a surface of a delivery mechanism, with a coating substance, the apparatus comprising:

an inclined chute for conveying the coating substance to a location above said surface carrying said product, an exit end of the chute being suitable for siting above said surface;

a gas jet nozzle for location substantially immediately beneath the exit end of the chute;

an electrode attached to or located adjacent to said nozzle;

a source of pressurised gas and means for coupling said source to said gas jet nozzle; and

means for charging said electrode;

wherein in use gas ejected from said nozzle passes over said electrode and is charged, and impinges on the coating substance falling from the exit end of the chute.

In accordance with a still further aspect of the present invention, there is provided apparatus for use in coating a product with a coating substance, the apparatus comprising:

a gas or liquid jet nozzle having means for coupling the nozzle to a supply of pressurised gas or liquid;

a nozzle holder to which the jet nozzle can be removably attached;

a needle electrode attached to the nozzle holder and means for coupling the electrode to a high voltage charging means; and

the needle electrode being located such that in use when gas or liquid is ejected from the nozzle the gas or liquid passes through an electric field created by the electrode.

The present invention is applicable in particular to the coating of snack food products with a dry, powdered flavouring. However, the invention may also be used to coat other products including, but not limited to, pharmaceuticals. The invention may also be used to coat products with substances other than dry powdered substances including, for example, liquids and suspensions.

An advantage of the present invention is that the mechanism for delivering the coating substance to a location above the product delivery surface can be made relatively simple. As a pressurised gas is used to disperse the coating substance, there is no need for fine delivery slots or holes which can become easily blocked.

Preferably, the chute is vibrated or shaken both to disperse the coating substance and to aid transfer of the substance along the chute. Preferably, an exit end of the chute has a width of 75mm or less.

The coating substance may be delivered to said chute from a supply tank or hopper using, for example, a screw conveyor.

Preferably, the coating substance is subjected to said at least one pressurised gas stream and to said electric field immediately beneath an exit end of the chute.

Preferably, said gas jet nozzle is attached to an underside of the conveyor, so that said nozzle is located directly beneath the exit end of the conveyor. More preferably, any of said gas jet nozzle, said electrode, said source of pressurised gas and said charging means are substantially decoupled from the remainder of said apparatus. An advantage of decoupling these components is that the electrical connections therein are then not subject to the vibrations that they might otherwise be subject to when coupled to the chute.

A needle electrode will generate a charging field which is more efficient at charging a gas or liquid ejected from the nozzle, than alternative electrode designs such as a wire electrode. Preferably, the needle electrode is relatively short, e.g. 1mm or less.

It will be appreciated that the design of the apparatus makes it easy to change the jet nozzle, e.g. from a nozzle designed to spray gas to a nozzle designed to spray liquid.

CLAIMS:

1. A method of coating a product, carried on a surface of a delivery mechanism, with a coating substance, the method comprising:

delivering the coating substance to a location above said surface carrying said product via an inclined chute down which the coating substance falls under gravity;

allowing the coating substance to fall under gravity in the direction of said surface from the end of the inclined chute;

during its fall under gravity, and substantially immediately beneath the exit end of said inclined chute, subjecting the coating substance to at least one pressurised gas stream, whereby the falling coating substance is dispersed, and to an electric field, whereby the coating substance is charged.

2. A method according to claim 1 and comprising vibrating or shaking the chute to disperse the coating substance and to aid transfer of the substance along the chute.

3. A method according to claim 1 or 2, wherein the pressurised gas stream is subjected to said electric field prior to impinging upon the coating substance.

4. A method according to any one of claims 1 to 3, wherein the pressurised gas stream impinges upon the coating substance prior to subjection to said electric field.

5. Apparatus for coating a product, carried on a surface of a delivery mechanism, with a coating substance, the apparatus comprising:

an inclined chute for conveying the coating substance to a location above said surface carrying said product, an exit end of the chute being suitable for siting above said surface;

a gas jet nozzle for location substantially immediately beneath the exit end of the chute;

an electrode attached to or located adjacent to said nozzle;

a source of pressurised gas and means for coupling said source to said gas jet nozzle; and

means for charging said electrode;

wherein in use gas ejected from said nozzle passes over said electrode and is charged, and impinges on the coating substance falling from the exit end of the chute.

6. Apparatus according to claim 5 and comprising means for vibrating or shaking the chute.

7. Apparatus according to claim 5 or 6, wherein in use the gas ejected from said nozzle passes over said electrode prior to impinging upon the coating substance.

8. Apparatus according to any one of claims 5 to 7, wherein in use the gas ejected from said nozzle impinges upon the coating substance prior to passing over said electrode.

9. Apparatus for use in coating a product with a coating substance, the apparatus comprising:

a gas or liquid jet nozzle having means for coupling the nozzle to a supply of pressurised gas or liquid;

a nozzle holder to which the jet nozzle can be removably attached;

a needle electrode attached to the nozzle holder and means for coupling the electrode to a high voltage charging means; and

the needle electrode being located such that in use when gas or liquid is ejected from the nozzle the gas or liquid passes through an electric field created by the electrode.